Gene Interaction-III

Supplementary gene (Recessive epistasis) 9:3:4

In this epistasis, one dominant gene has phenotypic effect while the other dominant gene has no phenotypic effect but its presence with the first gene modifies the phenotypic expression.

Parents Purple X Red

Genotype RRPP rrpp

Gametes RP rp

F1 RrPp Purple

F1 X F1 Purple X Purple

	RP	Rp	rP	rp
RP	RRPP (P)	RRPp (P)	RrPP (P)	RrPP (P)
Rp	RRPp (P)	RRpp (W)	RrPp (P)	Rrpp (W)
rP	RrPp (P)	RrPp (P)	RrPP (R)	RrPp ®
rp	RrPp (G)	Rrpp (W)	rrPp (RP)	rrpp (W)

9 Purple : 3 Red : 4 White

Additive factors (9:6:1) (Polymeric gene action)

Here, the two genes that control a character produces identical phenotype when they are alone. However, when both the genes are present together, their

phenotype effect is enhanced as if the effect of the two genes are cumulative or additives. Both the genes show complete dominance. In barley the two completely dominant genes A and B affect the length of awns, the thin needle like extension of lemma genes A and B alone (e.g. Aabb and aaBB give gives rise to awn of medium length, the effect of A is the same as that of B. However, when both the genes A and B are present together they produce long awn indicating the effect of A and B genes of awn length are added together. Individual homozygous recessive for both these genes are awnless.

Parents Long awned awnless

Genotype AABB X aabb

Gametes rp

F1 AaBb Long awned

F1 X F1 Long awned X Long awned

	AB	Ab	aB	ab
AB	AABB (L)	AABb (L)	AaBB (L)	AaBB (L)
Ab	AABb (L)	AAbb (A)	AaBb (L)	Aabb (A)
aB	AaBB (L)	AaBb (L)	aaBB (A)	aaBb (A)
ab	AaBb (L)	Aabb (A)	aaBb (A)	aabb (a)

9 Long awned : 6 awned : 1 awnless